

GENERAL INDEX TO VOLUME XXVII

New scientific names of plants and the final members of new combinations are printed in **bold-face** type; synonyms and page numbers having reference to figures and plates, in *italics*; and previously published names and all other matter, in ordinary type.

A

- Acidity of media, effect of, on growth of *Thielaviopsis basicola*, 571, 573
 Acids, lichen, 21, 37
 Algae, parasitism of fungi on, 1, 21, 34
 Alibertia garapatica, 341
 Allen, Paul H., Miscellaneous Panama collections, chiefly by, 265
Allenanthus, 344; **erythrocarpus**, 344
 Alsophila villosa, 265
Amblirion album, 487
 Amyris **barbata**, 313
 Anatomy of the Pteridosperms, stelar, with particular reference to the secondary wood, 51
 Andrews, Henry N. On the stelar anatomy of the Pteridosperms, with particular reference to the secondary wood, 51
 Anemia millefolia, 265
 Aneurophyton, 71, 90; germanicum, 72, 85
 Angiospermae-Dicotyledaeae, tracheid measurements in, 87
 Anthracothecium ochraceoflavum, 19, 28, 50; pyrenuloides, 19, 28, 50
 Apocynaceae, Panamanian, 331
 Araceae, Panamanian, 267
 Araliaceae, Panamanian, 324
 Araucarioxylon, 63
 Arthopyrenia punctiformis, 27
 Arthopyreniaceae, 31
 Aeclepiadaceae, Panamanian, 333
 Audibertia, 259, 260

B

- Baptisia, A monograph of the genus, 119
 Baptisia, 136; alba, 167, 222, 224, 236; albescens, 169; albiflora, 167; australis, 200, 220, 224; australis var. β , 203, var. minor, 203; \times bicolor, 206, 223; bracteata, 154; bracteata, 156; Bushii, 166; caerulea, 200; calycosa, 146; calycosa var. villosa, 146; confusa, 151, 200; cuneata, 164; \times Deamii, 188, 234; elliptica, 149, var. tomentosa, 150; exaltata, 200; \times fragilis, 198, 232; fraxinifolia, 207, 249; \times fulva, 143; Gibbesii, 183; hirsuta, 146; Hugeri, 208, 248; intercalata, 153, 242; \times intermedia, 165, 230; laevicaulis, 162; lanceolata, 147; lanceolata, 149, var. β , 149, var. γ , 151, var. tezana, 151, var. uniflora, 151; Le Contei, 144, f. robustior, 145; Le Contei, 145, var. β , 145; leucantha, 172, 226, 232, 234, var. divaricata, 179, 244, var. pauciflora, 179, 244; leucophaea, 156, 228, var. glabrescens, 161, 230; leucophaea, 155, var. laevicaulis, 162; lupinoides, 208; macilenta, 191, 244; megacarpa, 194, 222; microphylla, 142, 224; microphylla var. axillaris, 142; minor, 203, 222, 224, 228, var. aberrans, 206; mollis, 208, 248; nepalensis, 208; nuculifera, 151; Nuttalliana, 151; oxyphylla, 162; pendula, 170, 238, var. macrophylla, 172, 238, var. obovata, 171, 238; perfoliata, 141, 222, 224; perfoliata var. lobata, 142; \times pinetorum, 189, 236; psammophila, 180, 240; retusa, 208; riparia, 192, 240, var. minima, 193, 240; saligna, 155; Serenae, 190; simplicifolia, 140, 224; sphaerocarpa, 194, 226; stipulacea, 142; \times stricta, 166; \times sulphurea, 199, 226; tezana, 151, 203; tinctoria, 183, 222, 224, var. crebra, 185, 234, 236, var. projecta, 188; tinctoria var. Gibbesii, 183, triflora, 208; uniflora, 148, 151; versicolor, 208; versicolor, 200; vespertina, 203; villosa, 181; villosa, 166; viridis, 196, 230, 232
 Barnhart, J. H., Panamanian Lentibulariaceae determined by, 341
 Barometric conditions, effect of, on tree-trunk pressures, 368
 Begonia chiriquensis, 321; Pittieri, 322; pumilio, 322; Torresii, 322
 Begoniaceae, Panamanian, 321
 Beilmann, August P. An attempt to record internal tree-trunk pressures, 365

Bennettiales, lengths of tracheids in the, 87
 Besleria acropoda, 341
 Bilignea resinosa, 82, 85, tangential section through secondary wood, 118; solida, 82
 Borreria pumilio, 342
 Bottaria, 18, 28; erucata, 18
 Bouteloua filiformis, 266
 Bromeliaceae, Panamanian, 279
 Buddleja alpina, 330

C

Cactaceae, Panamanian, 323
 Calamopityeae, 63
 Calamopitys: ray divisions in, 76; americana, 63; annularis, 63, 82, sections of xylem, 106, pitting in the tracheids of, 118; beinertiana, 63; fascicularis, 63; radiata, 63; saturni, 63, transverse section of stem, 104
 Calathiops Bernhardtii, 71
 Callixylon trifilieve, 85; Newberryi, 85
 Calochilus Holtzei, 536
 Calochortus, A monograph of the genus, 371
 Calochortus, 385; acuminatus, 480; albus, 396; albus, 487, var. amoenus, 395; var. paniculata, 396, var. rubellus, 396; amabilis, 402; ambiguus, 505, 558; amoenus, 395; apiculatus, 422; aureus, 493; Barbati (subsect.), 525; barbatus, 525; barbatus subsp. chihuahuensis, 526, var. chihuahuensis, 526; Barnardi, 536; Benthani, 406, var. Wallacei, 406; Bonplandianus, 533; bruneauis, 492; Calochortidea (sect.), 391; campestris, 497; catalinae, 454; cernuus, 531; ciliatus, 446; citrinus, 473, 517; clavatus, 503, var. gracilis, 504; clavatus var. avius, 503; coeruleus, 414, var. nanus, 416, var. Westoni, 416; coeruleus var. Maweanus, 408; collinus, 425; comosus, 464; concolor, 498; cyaneus, 480; Cyclobothra (sect.), 512; Davidsonianus, 460; discolor, 492; Douglasianus, 439; Dunnii, 458; elegans, 417, var. oreophilus, 419, var. selwayensis, 419; elegans, 408, var. amoenus, 395, var. Lobbii, 408, β major, 417, α minor, 417, var. nanus, 416, var. subclavatus, 430; Eleganti (subsect.), 404; Englerianus, 396; Eucalochortus (sect.), 391; eurycarpus, 440; eumbellatus, 441; excavatus, 497; exilis, 523; flavus, 526; flexuosus, 456; foliosus, 535; fuscus, 528; Galei, 409;

Ghiesbreghtianus, 524; Ghiesbreghtian (subsect.), 521; Ghiesbreghtii, 524; glaucus, 408; Goldyi, 407; grandiflorus, 533, 534; Greenei, 444, 554; Greenei var. calvus, 444; Gunnisoni, 508, var. perpulcher, 512; Gunnisoni var. immaculatus, 508, var. Kreglagi, 508, var. maculatus, 508, var. purus, 508; Gunnisoniani (subsect.), 505; Hartwegi, 534; Hintoni, 524; Holtzei, 536; Howellii, 445; invenustus, 494; invenustus var. montanus, 459; Kennedyi, 499; Kennedyi var. Munzii, 499; lanternus, 396; Leichtlinii, 476; lilacinus, 428; Lobbii, 420; longebartatus, 436; luteus, 473; luteus, 487, var. citrinus, 469, 473, var. concolor, 498, var. oculatus, 469, 472, var. robustus, 469, var. Vestae, 471, var. Weedii, 517; luteus \times superbus, 476; Lyallii, 446; Lyoni, 454; Macrocarpi (subsect.), 480; macrocarpus, 480, var. maculosus, 485; macrocarpus var. cyaneus, 480; Macrodenus (subgenus), 391; maculatus, 406; maculosus, 485; madrensis, 521; Mariposa (section), 450; Mariposa (subgenus), 450; Maweanus, 408, 414, var. major, 409, var. roseus, 409; medius, 536; minimus, 430, 556; monanthus, 465, 556; monophyllus, 406; montanus, 459; nanus, 416; nigrescens, 530, 558; Nitidi (subsect.), 436; nitidus, 440; nitidus β cornutus, 406, var. eurycarpus, 440; Nudi (subsect.), 425; nudus, 432; nudus var. shastensis, 432; Nuttalliani (subsect.), 485; Nuttallii, 487, var. aureus, 493, var. bruneauis, 492, var. panamintensis, 493; Nuttallii, 477, var. australis, 494, var. Leichtlinii, 477, var. subalpinus, 477; obispoensis, 520; oculatus, 472; pallidus, 526; Palmeri, 459; Palmeri var. Dunnii, 458, var. paludiculus, 459; paludicola, 459; parviflorus, 441; pavonaceus, 439; persistens, 448, 554; pictus, 466; Platycarpus (subgenus), 392, 450; Plummerae, 515; Pringlei, 529; Pulchelli (subsect.), 393; pulchellus, 401; pulchellus var. amabilis, 402, var. maculosus, 402, var. parviflorus, 406; Purdyi, 409; purpurascens, 466; Purpurei (subsect.), 531; purpureus, 533; pusillus, 536; rhodothecus, 487; roseus, 466; selwayensis, 419; shastensis, 432; sp., 439; spatulatus, 528; speciosus, 499; splendens, 460; splendens var. atrovioleaceus, 460, var.

- major, 460, var. *montanus*, 459, var. *ruber*, 460, var. *rubra*, 460; *striatus* 463; *subalpinus*, 420; *superbus*, 469; *superbus* var. *pratensis*, 469; Tolmiei, 408; *umbellatus*, 425; *umbellatus*, 441; *uniflorus*, 428; *Venusti* (subsect.), 452; *venustulus*, 521; *venustus*, 465; *venustus* var. (†), 508, var. *brachysepalus*, 472, var. *Caroli*, 466, var. *citrinus*, 469, 473, var. *el-dorado*, 466, var. *lilacinus*, 469, var. *oculatus*, 469, var. *pictus*, 466, var. *purpurascens*, 466, var. *purpureus*, 466, var. *robusta*, 469, var. *roseus*, 466, var. *sanguineus*, 466, var. *sulphureus*, 466, var. *superbus*, 469, var. *Vesta*, 471; *Vestae*, 471; *vestitus*, 536; *Wallacei*, 406; *Watsoni*, 487, var. *ambiguus*, 507; *Weediani* (subsect.), 514; *Weedii*, 517, var. *intermedius*, 519, var. *peninsularis*, 519, var. *vestus*, 518; *Weedii* var. *albus*, 515, var. *obispoensis*, 520, var. *purpurascens*, 515, 518, var. *Westoni*, 416
- Calymmatotheca* Kidstoni, 71
- Camaridium dendrobioides*, 283
- Camp, W. H., Panamanian Ericaceae determined by, 327
- Campanulaceae (Lobelioideae), Panamanian, 347
- Capparidaceae, Panamanian, 311
- Capparis *mirifica*, 311
- Carboniferous plants, 52, 91
- Cardamine *ovata*, 311
- Casparia, 322
- Castilleja aurantiaca*, 338; *bicolor*, 340; *chiriquiensis*, 338; *communis*, 341; *Seibertii*, 339
- Cavendishia melastomoides*, 328; *stenophylla*, 327
- Centropogon affinis* var. *costaricanus*, 352, var. *venezuelanus*, 351; *occineus*, 353; *congestus*, 352; *costaricanus*, 352; *cuspidatus*, 350; *diocleus*, 352; *ferrugineus* var. *costaricanus*, 352, var. *venezuelanus*, 351; *granulosus*, 350; *macrophyllus* var. *congestus*, 352; *nutans*, 350; *radicans*, 353; *roseus*, 353
- Chemical reagents, reactions of some pyrenocarpous lichens with, 22
- Clusia coclensis*, 321
- Cola togoensis*, rays of, 74, 79
- Coniferae, tracheid measurements in, 87
- Contributions to the study of the Trypetheliaceae, 1
- Contributions toward a flora of Panama. IV. Miscellaneous collections, chiefly by Paul H. Allen, 265
- Convolvulaceae, Panamanian, 334
- Cordatales, tracheid measurements in, 87
- Cordyceps, 29
- Cotton, pathogenicity of *Thielaviopsis basicola* on, 565, 586
- Crotalaria*, 136; *alba*, 167; *perfoliata*, 141
- Crotalopsis*, 122, 136
- Cretaceous Dicotyledons, tracheid measurements of, 88
- Cruciferae, Panamanian, 311
- Cryptocentrum gracillimum*, 284, Standleyi, 284
- Curtia tenuifolia*, 330
- Cutak, L., Panamanian Cactaceae determined by, 323
- Cyathea conspersa*, 265
- Cycadales, tracheid measurements in, 87
- Cycadoxylon* (*Lyginodendron*): *anomalum*, 69, 77, pitting in walls of secondary xylem, 106, tangential section through secondary xylem, 110; *robustum*, 69, 79, 87, ray division in, 74, series of ray tracings in, 80, tangential section through secondary xylem, 114
- Cycads, 52, 55
- Cyclanthera caerulea*, 408
- Cyclobothra*, 386, 512; *alba*, 396; *barbata*, 526; *coerulea*, 414; *elegans*, 417, var. *lutea*, 406; *flava*, 526; *fusca*, 528; *grandiflora*, 533; *Hartwegi*, 534; *lutea*, 526; *monophylla*, 406; *nitida*, 440; *pallida*, 526; *paniculata*, 396; *propinqua*, 526; *pulchella*, 401; *purpurea*, 533; *uniflora*, 428
- Cytisus rhombifolius*, 249

D

- Dadoxylon* sp., pitting in tracheids of, 118
- Dermatocarpon, 19
- Devonian-Carboniferous complex, relationships of the, 89
- Dicotyledons, Lower Cretaceous, tracheid measurements of the, 88
- Dieranopteris mellifera*, 265
- Dioscorea convolvulacea*, 271; *racemosa*, 271
- Dioscoreaceae, Panamanian, 271
- Diplazium Sanctae Rosae*, 265
- Diplotnema distans*, 62
- Drepilia*, 246
- Dryopteris scalaris*, 266

E

- Eaplosia*, 136; *ovata*, 140
- Endoxylon zonatum*, 67, 82; tangential section through secondary wood, 118

- Epidendrum criniferum*, 282; *repens*, 282; *triangulabium*, 282
Epiphyllum Pittieri, 323
 Epling, Carl: Panamanian species of Labiatae determined by, 337; Supplementary notes on *Salvia*: *Audibertia*, 259
Ericaceae, Panamanian, 327
Eriocaulaceae, Panamanian, 268
Eriocaulon Woodsonianum, 268
Eristophyton, 63; *Beinertianum*, 67, 82; *fasciculare*, 67, 82
Eugenia vallis, 323
Euphorbiaceae, Panamanian, 314

F

- Fossil woods, 52
Fritillaria alba, 487; *barbata*, 526; *purpurea*, 533
Funastrum glaucum, 333
 Fungi: origin of races of, 561; pathogenic, 561; pyrenomycetous, 1; relation of, to lichens, 34

G

- Gaiadendron poasense*, 309
Gaultheria chiriquensis, 328; *hirtiflora*, 329; *pichinchensis*, 329
Gentianaceae, Panamanian, 330
Gesneriaceae, Panamanian, 341
Gilibertia sessiliflora, 326
Ginkgoales, tracheid measurements in, 87
Gonolobus Allenti, 333, 333; *uniflorus*, 334
Gramineae, Panamanian, 266
Guttiferae, Panamanian, 321
Guzmania diasitiflora, 270
Gymnosperms, morphology of early, 71

H

- Habenaria strictissima* var. *odontopetala*, 271
Heterangium sp., 69, 83, 90; pitting in, 85, 106; *punctatum*, 85; *tillaeoides*, 85
Hibiscus spathulatus, 319
 Hydrogen-ion concentration, effect of, on growth of *Thielaviopsis basicola*, 571, 573
Hydrophyllaceae, Panamanian, 335
Hymenodium crinitum, 266
Hyperbaena Allenti, 310; *oblongifolia*, 311
Hypoxylon, 29

I

- Indigofera*, 135
 Instrument for recording internal tree-trunk pressures, 365, 370
Ipomoea chiriquensis, 334

J

- Jacquinia axillaris*, 330; *panamensis*, 329
 Johnson, George Thomas. Contributions to the study of the Trypetheliaceae, 1
 Jonker, F. P., Panamanian *Gentianaceae* determined by, 330
Jussiaea inclinata, 324

L

- Labiatae*, Panamanian, 337
Laelia Lueddemanii, 282
 Larisey, Mary Maxine. A monograph of the genus *Baptisia*, 119; A revision of the North American species of the genus *Thermopsis*, 245
Lasinia, 136; *bracteata*, 155, 156; *cinerea*, 181; *fulva*, 181; *reticulata*, 148
Laurera, 17, 32; spore germination of, 23; *chapadensis*, 50; *madreporiformis*, 17, 44, 50; *sanguinaria*, 18, 50
Lentibulariaceae, Panamanian, 341
 Leonian's agar, growth of *Thielaviopsis basicola* on, 566, 571, 598
Lepanthes rotundifolia, 275, 354; *Turi-alvae*, 275
Lepidophloeos Wunschianum, 68
 Lichens, symbiosis of, 1; *pyrenocarpous*, 1, 4; acids in, 21, 37; spore germination in, 23; substrate relations of, 24
Liliaceae, Panamanian, 270
Liparis fratrurn, 282
Lippia hemisphaerica, 336; *oxyphyllaria*, 335; *Torresii*, 335
Lisianthus congestus, 331; *latifolius*, 331
Lithospermum Drummondii, 263
Loasa grandis, 321
Loasaceae, Panamanian, 321
Lobelia Cardinalis, subsp. *Cardinalis*, 348, subsp. *graminea*, 347, var. *graminea*, 348, var. *multiflora*, 349, var. *phyllostachya*, 349, var. *pseudosplendens*, 348; *fulgens* var. *multiflora*, 349; *graminea*, 347; *iraseuensis*, 350; *laxiflora*, 349, var. *angustifolia*, 349, var. *laxiflora*, 350, var. *mollis*, 349, var. *Nelsoni*, 349; *laxiflora*, 350; *longicaulis*, 350; *neglecta*, 350; *Nelsoni*, 349; *persicaefolia* var. *mollis*, 350; *phyllostachya*, 349; *urticifolia*, 350
Loganiaceae, Panamanian, 330
Loranthaceae, Panamanian, 307
 Lundell, C. L., Panama plants determined by: *Rutaceae*, 313; *Theophrastaceae*, 329
Luziola Spruceana, 266

Lyginopteris, 72; *oldhamia*, 56, 69, ray division in, 74, 74, rays of secondary xylem, 116, tracheid measurements in, 86; transverse sections of roots, 104, of stems, 98, 100, 102, 104, 108
Lyginodendron anomalum, 78
Lyginorachis, 62

M

McVaugh, Rogers, Panamanian Campanulaceae (Lobelioideae) determined by, 347
Macrodenus, 391
 Malvaceae, Panamanian, 319
 Manometers in tree-pressure work, 365
Maregravia ampulligera, 319; membranacea, 320
 Maregraviaceae, Panamanian, 319
Mariposa, 450
Marsdenia trivirgulata, 334
Marsilea polycarpa, 265
 Marsileaceae, Panamanian, 265
Masdevallia Allenii, 273, 354; *chontalensis*, 274; *ecaudata*, 274; *simula*, 274, 354; *triartistella*, 274
Maxillaria Allenii, 282, 368; *charactacifolia*, 283; *dendroboloides*, 283; *Lankesteri*, 284; *Wercklei*, 284
 Maxon, W. R., determination of Panama plants by: *Marsileaceae*, 265; *Polypodiaceae*, 265
 Media, growth of *Thielaviopsis basicola* on, 566, 572, 575; *Leonian's*, 571, 598; onion, 569, 596; potato-dextrose, 569, 594, 598
Medullosa anglica, 69, 76, 85, 87; *centrofilis*, 76; *gigas*, 82; *Leuckarti*, 69, 76; *Noei*, 69, 76, 87, 116; *Solmsii*, 69, 81, section through secondary wood, 118; *stellata*, 69
Megaloxylon, 68, 77, 90; *Scottii*, 69, tangential section through secondary xylem, 114
Melanotheca, 6, 32; spore germination of, 23; *aggregata*, 6, 44, 46; *arthonioides*, 11, 50; *concatervans*, 12; *cruenta*, 10
 Menispermaceae, Panamanian, 310
Mertensia Drummondii (Lehm.) G. Don, 263, 264; *sibirica* var. *Drummondii*, 263; *viridis*, 263, 264
Mesopitys Tehihatcheffi, 68
Mesoxylon multirame, 85; pitting in tracheids of, 118
 Moldenke, H. N., Panama plants determined by: *Eriocaulaceae*, 268; *Verbenaceae*, 335
 Monograph of the genus *Baptisia*, 119
 Monograph of the genus *Calochortus*, 371

Morton, C. V., Panama plants determined by: *Dioscoreaceae*, 271; *Gesneriaceae*, 341; *Loganiaceae*, 330; *Rhamnaceae*, 318; *Solanum*, 337
 Munz, P. A., Panamanian *Onagraceae* determined by, 324
 Myrtaceae, Panamanian, 323

N

Neobrittonia acerifolia, 319

O

Oaks, internal pressure of, 367
 Observations on the cultural and pathogenic habits of *Thielaviopsis basicola* (Berk. & Br.) Ferraris, 561
Onagraceae, Panamanian, 324
Oncidium globuliferum, 284, var. *costaricense*, 284
 Onion agar, growth of *Thielaviopsis basicola* on, 566, 569, 596
Orchidaceae, Panamanian, 271
Oreopanax, 327; *costaricensis*, 327; *Oerstedianum*, 326; *Standleyi*, 326; *vestitum*, 324
Ornithidium aurantiacum, 284; *Wercklei*, 284
 Ownbey, Marion. A monograph of the genus *Calochortus*, 371
Oxalidaceae, Panamanian, 312
Oxalis darienensis, 312; *peruviana*, 313; *ramulosum*, 313

P

Palaeopitys, 71, 90; *Milleri*, 72, 85
 Panama, Contributions toward a flora of. IV. Miscellaneous collections, chiefly by Paul H. Allen, 265
 Pathogenic fungi, 561
 Pathogenicity, variation in, of races of *Thielaviopsis basicola*, 586
Paullinia Allenii, 315; *glomerulosa*, 317; *verecunda*, 316
 Peanuts, pathogenicity of *Thielaviopsis basicola* on, 561
 Pennell, F. W., Panamanian *Scrophulariaceae* determined by, 338
Peperomia albescens, 299; *antoni* var. *reducta*, 299, f. *fertilior*, 299, f. *lutea*, 300; *Appelator*, 300; *bifrons*, 300; *bocasensis*, 300; *brevipeduncula* var. *major*, 301; *casitana*, 301; *cerropuntana*, 301; *chiqueroana*, 301; *cruentata*, 302; *digitinervia*, 302; *diruptorum*, 302; *duricaulis*, 302; *insueta*, 303; *laesa*, 303; *leridana*, 303; *lopezensis*, 303; *nievecitana*, 304; *nova-helvetiae*, 304; *rivi-vetustae*, 304; *sarcodes*, 304; *Simulatio*, 305; *tenebraegaudens*, 305; *Woodsonii*, 305

- Pericaulon*, 136; *cordatum*, 141; *microphyllum*, 142; *perfoliatum*, 141
Phoradendron Allenii, 307; *herrerense*, 307; *novae-helvetiae*, 307; *Panamanae* (sect.), 308; *pergranulatum*, 308; *sonanum*, 308; *Woodsonii*, 308
 Physiologic specialization in *Thielaviopsis basicola*, 562
Pinguicula crenatiloba, 341
Piper affectans, 287; *albopunctulatissimum*, 287; *Alstoni*, 287; *alveatum*, 287; *amphibium*, 288; *arctilimbium*, 288, var. *Allenii*, 288; *barbirostre*, 288; *bisacuminata*, 289; *casitense*, 289; *cerro-puntoense*, 289; *colon-insulae*, 290; *conversum*, 290; *cricalmense*, 290; *Diazanum* var. *viae-Kobeanae*, 290; *erubescentspica*, 291; *fluvii-initil*, 291; *frijolesanum* var. *grandifolium*, 291; *gamboanum* var. *yapense*, 291; *gatumense* var. *cocleanum*, 292, var. *latum*, 292; *Gigas*, 292; *heraldi*, 292, var. *amplius*, 292, var. *cocleanum*, 292; *humorigaudens*, 293; *insulicolum*, 293; *konkintoense*, 293; *Margaretae*, 293; *minute-scabiosum*, 294, var. *arborescens*, 294; *novae-helvetiae*, 294; *partiticuspe*, 294; *paso-anchoense*, 295; *perfulgii*, 295; *Permari*, 295; *peruligerum*, 295; *pervicax*, 296; *pseudoviridicaule*, 296, var. *nievecitanum*, 296; *salamancanum*, 296; *san-joseanum* var. *kobense*, 297, var. *panamanum*, 297, var. *remediosense*, 297, var. *tabogense*, 297; *seducentifolium*, 297; *tabernillanum*, 298, var. *anconense*, 298; *tardana*, 298; *tuberculatum* var. *Allenii*, 298; *varium*, 299; *Whiteae*, 299
 Piperaceae, Panamanian, 287
Piptanthus nepalensis, 208
Pitya antiqua, 85
Platycarpus, 392, 450
Pleurothallis Allenii, 275, 358; *calypstrostele*, 276, 358; *cobraeformis*, 277, 360; *eumecocaulon*, 277; *gonioglossa*, 277; *hispida*, 277, 358; *homalanthia*, 279; *hondurensis*, 281; *lepidota*, 279, 356; *pteroaulis*, 280, 356; *Rowleei*, 276; *simulans*, 281, 358
Poa annua, 266
Podalyria, 136; *alba*, 167, 172; *australis*, 200; *bracteata*, 55; *mollis*, 248; *perfoliata*, 141; *tinctoria*, 183; *uniflora*, 148; *villosa*, 181
 Polypodiaceae, Panamanian, 265
Polypodium Kunzeanum, 266; *nanum*, 266
Ponthieva maculata, 272; *racemosa*, 272
Poroxylon Edwardsii, pitting in tracheids of, 118
 Potato dextrose agar, growth of *Thielaviopsis basicola* on, 566, 569, 581, 594, 598
Pothomorphe Allenii, 306; *almirantensis*, 306; *Ballejorum*, 306, var. *paucispica*, 306; *tecumensis*, 306, var. *grandis*, 307
Prescottia stachyodes, 272
 Pressures, An attempt to record internal tree-trunk, 365
Prestonia Allenii, 332; *remediorum*, 332; *speciosa*, 332
Primula oboconica, pathogenicity of *Thielaviopsis basicola* on, 565, 586
Protopytis radicans, tracheids of, 118
Prunus cornifolia, 312
Pseudopyrenula, 34
Pseudorhipsalis himantoclada, 323
Pseudostroma, definition of, 9, 31
Psittacanthus Allenii, 309; *dilatatus*, 309; *lateriflorus*, 309; *peronopetalus*, 310; *Schiedeanus*, 310
Psychotria Allenii, 342
 Pteridosperms, On the stelar anatomy of the, with particular reference to the secondary wood, 51
Pyrenocarpeae, 1
Pyrenomycetes, 2
Pyrenula, 26, 50; *Coryli*, 27; *laevigata*, 27; *mamillana*, 44; *nitida*, 26
Pyrenulaceae, notes on the, 31
- Q
- Quercus macrocarpa*, internal pressure of, 367; *rubra*, internal pressure of, 369
- R
- Rafnia perfoliata*, 141; *triflora*, 208
Rauwolfia purpurascens, 331
 Rawlings, Ralph Edmund. Observations on the cultural and pathogenic habits of *Thielaviopsis basicola* (Berk. & Br.) Ferraris, 561
 Ray structure of secondary xylem of pteridospermous woods, 70
Renealmia rubro-flava, 271
 Revision of the North American species of the genus *Thermopsis*, 245
 Rhamnaceae, Panamanian, 318
Rhamnus capreaefolia, 318
Rhetinangium Arberi, pitting in tracheids of, 118
Rhipidopteris Standleyi, 266
Rhynia, stele of, 90
Ripasia, 122, 136; *cerulea*, 201

Rondeletia *platysepala*, 343
 Rosaceae, Panamanian, 312
 Rubiaceae Panamanian, 341, 345
 Rutaceae, Panamanian, 313

S

- Salvia: Audibertia, Supplementary notes on, 259
 Salvia, 259; *albopileata*, 337; *apiana*, 260; \times *mellifera*, 261, \times *Munzii*, 261; *Brandegei*, 259, 262; *chionoeplica*, 260, 262; *Clevelandii*, 260; *leucophylla*, 260; *Munziana*, 261; *Munzii*, 260, \times *apiana*, 260; *Wagneriana*, 337
 Sapindaceae, Panamanian, 315
 Schery, Robert W., Robert E. Woodson, Jr. and. Contributions toward a Flora of Panama. IV. Miscellaneous collections, chiefly by Paul H. Allen, 265
 Schizopodium, 90
Schomburgkia Lueddemannii, 282
Schultesia brachyptera, 331; *Peckiana*, 331
Scolobus, 246
 Scrophulariaceae, Panamanian, 338
Selaginella spinulosa, 68
Serjania cissifolia, 317
Sigmatostalis abortiva, 284, 360; *costaricensis*, 285; *guatemalensis*, 285; *hymenantha*, 286; *racemifera*, 285, 364
Siphocampylus coccineus, 353; *macrophyllus*, 352; *radicans*, 353; *roseus*, 353
Sloanea microcephala, 318; *platyphylla*, 318
Smilacina Gigas, 270; *paniculata*, 270
 Smith, A. C., Panamanian plants determined by: Araliaceae, 324; Ericaceae, 327
 Smith, L. B., Panamanian Bromeliaceae determined by, 269
 Solanaceae, Panamanian, 336
Solandra brachycalyx, 337
Solanum chiriquinum, 336; *Edwardsii*, 337; *enchylozum*, 337; *grossularia*, 337
Sophora, 136; *alba*, 167; *australis*, 200; *caerulea*, 200; *lanceolata*, 148; *perfoliata*, 141; *tinctoria*, 183; *villosa*, 181
Souroubea exauriculata, 320; *triandra*, 320; *venosa*, 320
Spathiphyllum floribundum, 267; *Friedrichsthalii*, 267; *Patini*, 267; *phrynifolium*, 267; *Zetekianum*, 267
 Sphaerales, 29, 33
Sphenopteris Baumlerei, 61; *Hoeninghausi*, 61; *taitiana*, 62
Sphenoxylon, 71, 90; *eupunctata*, 63, 72, 85; tangential section through secondary wood, 112
 Standley, P. C., Panama plants determined by: Araceae, 267; Begoniaceae, 321; Capparidaceae, 311; Convolvulaceae, 334; Euphorbiaceae, 314; Guttiferae, 321; Malvaceae, 319; Menispermaceae, 310; Myrtaceae, 323; Rubiaceae, 341; Sapindaceae, 315; Solanum, 336; Tiliaceae, 318; Valerianaceae, 346
 Stelar anatomy of the Pteridosperms, with particular reference to the secondary wood, 51
Stelis montana, 272; *Storkii*, 273
Stenomyelon tuedianum, 85; longitudinal section through primary wood, 118; pitting in the tracheids of, 118
Stigmarea annularis, 64
Stillingia haematantha, 314; *zelayensis*, 315
 Stroma, definition of term, 9, 28
 Substroma, definition of, 31
 Supplementary notes on Salvia: Audibertia, 259
Suteliffia insignis, 76, 85; tangential section through secondary wood, 112; transverse section of secondary xylem, 89
 Swallen, J. R., Panamanian Gramineae determined by, 266
 Symbiosis in the lichens, 1
Syngonanthus Pittieri, 269

T

- Tabernaemontana amygdaloides*, 332; *pendula*, 331
Telanium affine, 71
 Temperature: effect of, on internal tree-trunk pressures, 366; influence of, on growth of *Thielaviopsis basicola*, 576, 577
Tetrastichia, 71, 90; *bupatides*, 71, 72, 85
Thecophyllum angustum, 269
 Theophrastaceae, Panamanian, 329
Thermia, 246; *rhombifolia*, 249
 Thermograph, use of, 366
 Thermopsis, A revision of the North American species of the genus, 245
 Thermopsis, 122, 134, 246; *angustata*, 253; *annulocarpa*, 250; *arenosa*, 251; *argentata*, 257; *californica*, 255, var. *velutina*, 256; *caroliniana*, 247; *divaricarpa*, 251; *fabacea*, 253, 255; *fraxinifolia*, 207, 248; *gracilis*, 256, var. *argentata*, 257, var. *venosa*, 257; *gracilis* var. *velutina*, 256; *Hugerii*, 248; *macrophylla*, 255, var. *velutina*,

- 256; *mollis*, 208, 248; *montana*, 253; *montana* subsp. *ovata*, 254; *ovata*, 254; *pauciflora*, 252; *pinetorum*, 252; *rhombifolia*, 249, var. *annulocarpa*, 250, var. *arenosa*, 251; *robusta*, 255; *stricta*, 253; *subglabra*, 257; *velutina*, 256; *venosa*, 257; *xyloirrhisa*, 254
- Thielaviopsis basicola**, Observations on the cultural and pathogenic habits of, 561; chlamydospores, 579, 583, 585, 598; cultural characters of races, 568; endospores, 579, 581, 583; hosts, 565, 586; hydrogen-ion concentrations, effect of, on cultures, 571, 573; media, growth on various, 566, 569, 571, 575; morphological comparisons, 578; pathogenicity, 586, 589; physiologic specialization, 562; temperature, effect of, 576, 577; variation in cultures, 566
- Tiliaceae**, Panamanian, 318
- Tillandsia guanacastensis**, 270; *spiculosa* var. *palmana*, 270
- Tobacco**, pathogenicity of *Thielaviopsis basicola* on, 565, 586
- Tobagoa maleolens**, 342
- Tomasellia**, 17, 35; *aciculifera*, 17
- Tracheids** in the Pteridosperms, 82, 106, 118
- Tree-trunk pressures**, internal, An attempt to record, 365
- Trelease, W.**, Panamanian plants determined by: *Piperaceae*, 287; *Phoradendron*, 307
- Trentepohlia**, 6, 24
- Trypetheliaceae**: Contributions to the study of the, 1: acids of, 21; cytology of, 19; morphology of the, 5; pseudostroma and substroma of, 31; spore germination in the, 23; substrate relations of, 24
- Trypetheliopsis**, 39
- Trypethelium**, 13, 32; spore germination of, 23; *annulare*, 14, 19, 44, 48; *eluteriae*, 16, 44, 48, 50; *pallascens*, 15, 48; *tropicum*, 13, 44, 48
- V
- Valeriana Woodsonii**, 346
- Valerianaceae**, 346
- Verbenaceae**, Panamanian, 335
- Volkelia refracta**, 85
- W
- Watermelon**, pathogenicity of *Thielaviopsis basicola* on, 586
- Wrecklea lutea**, 319
- Wigandia caracasana**, 335
- Williams, Louis O.**: *Mertensia Drummondii* (Lehm.) G. Don, 263; Panamanian *Orchidaceae* determined by, 271
- Wood**, secondary, On the stelar anatomy of the Pteridosperms, with particular reference to the, 51, 68
- Woodson, Robert E. Jr. and Robert W. Schery**. Contributions toward a flora of Panama. IV. Miscellaneous collections, chiefly by Paul H. Allen, 265
- X
- Xylaria**, 29
- Xylem** of the Pteridosperms, 52, 68
- Z
- Zingiberaceae**, Panamanian, 271

